

Appln. No.: 10/712,087
Amendment Dated December 14, 2005
Reply to Office Action of September 16, 2005

YAO-3750US3

Remarks/Arguments:

By this Amendment, Applicants have amended claims 78 and 82, and have cancelled claims 81, 86 and 87. Thus, claims 78-80 and 82-85 are pending.

Claim Objections

Claim 86 is objected to on informal grounds. However, Applicants have cancelled claim 86 and thereby this claim objection is moot.

Claim Rejections Under §103

Claims 78-81 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Yamamoto in view of Bradley. By this Amendment, Applicants respectfully traverse this §103(a) rejection.

By Applicants' amendments to the claims, only claim 78 is an independent claim, with claims 79, 80 and 82-85 depending thereon.

Independent claim 81 is directed to a laser light source including the following elements:

- a distributive feedback-type semiconductor laser for emitting laser light,
- a semiconductor laser amplifier for amplifying the laser light, and
- an optical wavelength conversion element for receiving the amplified laser light

so as to generate a harmonic wave, **the optical wavelength conversion element having periodic domain inverted structures,**

- **wherein the distributed feedback type semiconductor laser is wavelength-locked.**

Applicants contend that the laser light source defined by claim 78 is patentably distinguished from the Yamamoto and Bradley patents at least based on the requirements of the optical wavelength conversion element having periodic domain inverted structures, and the distributed feedback-type semiconductor laser being wavelength-locked. Simply put, these features are neither taught nor suggested in the references of record.

In general, the Yamamoto patent relates to an optical harmonic generated device with reverse polarization layers which are made of non-linear optical crystal polarized in a lower direction and are periodically arranged at regular intervals, a non-reverse polarization layer which is made of the non-linear optical crystal polarized in the other direction and is arranged to surround the reverse polarization layers, a waveguide penetrating through alternate rows of the reverse and non-reverse polarization layers, a first electrode arranged on the waveguide, and second electrodes arranged on both ends of the alternate rows.

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More specifically, the Office Action primarily relies on the Yamamoto patent with respect to the shorter wavelength generating apparatus shown in Fig. 15. But the Office Action literally admits that "Yamamoto does not teach the semiconductor laser to be the distributed feedback type (DFB) or the output of the laser to be *amplified* by a solid-state source." To rectify this deficiency, the Office Action relies on the Bradley patent. But it is Applicants' position that the Bradley patent does not teach the features of the optical wavelength conversion element having periodic domain inverted structures or that the distributed feedback semiconductor laser is wavelength-locked as required by Applicants' independent claim 78.

The Bradley patent, in general, relates to a dielectric waveguide formed on a substrate of ultra-low thermal expansion glass which is assembled with a commercially available diode laser to complete a temperature stabilizer laser. The waveguide includes multiple dielectric films which have equal and opposite temperature induced changes in reflective index with respect to each other into which is formed a Bragg grating, the grooves of which are sufficiently shallow to allow penetration of light into the wavelength of 1m to 1cm. More specifically, the Bradley patent focuses on the Nd:YAG laser as shown in Fig. 5 of the Bradley patent. But nowhere in the Bradley patent is there any teaching or suggestion of the combination of features of the optical wavelength conversion element having periodic domain inverted structures and the distributed feedback-type semiconductor laser being wavelength-locked as set forth in claim 78. Thus, the combination of the Yamamoto and Bradley patents do not teach or suggest the laser light source defined by Applicants' claim 78 to which claims 79, 80 and 82-85 depend.

As a result of a laser light source having the combination of a wavelength-locked distributed feedback-type semiconductor laser and a wavelength conversion element having periodic domain inverted structures, there is the resulting effect of a light and compact laser light source having stable harmonic wave output. This advantage of Applicants' claimed invention is also not found in either the Yamamoto or the Bradley patents.

For the reasons stated above, Applicants respectfully submit that the §103(a) rejection directed to claims 78-81 be withdrawn

Claims 82-85 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Yamamoto. By this Amendment, Applicants respectfully traverse this §103(a) rejection.

As noted above, claims 82-85 are dependent on claim 78 and include the features of claim 78 which are discussed above as patentably distinguishing the laser light source of claim 78 from the Yamamoto patent. Thus, it is Applicants' position that dependent claims 82-85 are

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likewise patentably distinguished from the Yamamoto patent. Applicants request that the §103(a) rejection be withdrawn.

Claim 86 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Rao in view of Huber, and claim 87 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Rao in view of Huber and further in view of Yamamoto. Applicants respectfully submit that these rejections are moot in view of Applicants' cancellation of claims 86 and 87.

In view of the foregoing remarks and amendments, Applicants respectfully submit that claims 78-80 and 82-85 are in condition for allowance. Reconsideration and allowance of all pending claims are respectfully requested.

Respectfully submitted,



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